

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, DC 20554**

In the Matter of)	
)	
PCS Partners, L.P.)	WT Docket No. 16-149
)	
Petition for Waiver of 47 C.F.R. § 90.353(b))	
and Request for Extension of Time and for)	
Expedited Treatment)	

PETITION FOR RECONSIDERATION OF PCS PARTNERS, L.P.

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	ii
I. INTRODUCTION	1
II. ARGUMENT	4
A. The Denial Is Based on Erroneous Statements that Are Not Consistent with the Record	4
B. The Division Erred in Finding that the Waiver Standard Is Not Satisfied, While Failing to Give the Waiver Request a “Hard Look”	11
C. The Division Erred in Finding that Extension Should Not Be Granted	13
D. The <i>Order</i> Is Arbitrary and Capricious and Otherwise Contrary to Law	18
1. The <i>Order</i> Rests on Numerous Erroneous Factual Premises	19
2. The <i>Order</i> Fails to Account for Disparate Treatment of Similarly Situated Parties.....	19
III.CONCLUSION AND REQUEST FOR RELIEF	22
DECLARATION OF NAT NATARAJAN, Ph.D.	
DECLARATION OF DAVID G. BEHENNA	

EXECUTIVE SUMMARY

PCS Partners, L.P. (“PCSP”) respectfully requests reconsideration of an Order of the Wireless Telecommunications Bureau’s Mobility Division denying PCSP’s petition for waiver of Section 90.353(b) of the Commission’s rules and request for extension of time to complete buildout obligations associated with PCSP’s Multilateration and Location Monitoring Service (“M-LMS”) licenses (“Petition”).

In 2014, the Division issued an order giving PCSP two years “to make appropriate business decisions regarding [its] M-LMS licenses, including deployment of services or, if necessary, to engage in secondary markets transactions.” According to the Division, “equipment capable of operating in the M-LMS band currently exists,” although in fact any such equipment was not available to PCSP. PCSP chose to pursue deployment of services, specifically including M-LMS, utilizing its licenses.

The Petition requested an extension of buildout deadlines, and a waiver of Section 90.353(b) (which permits the transmission of “status and instructional messages” only if such messages are related to the location or monitoring functions of the system) in order to allow PCSP to deploy an LTE system capable of supporting both a trilateration-based M-LMS and machine type communication for narrowband Internet of Things applications and services. PCSP proposed specific deployment milestones. The Petition demonstrated that waiver would both further the underlying intent of the M-LMS rules and serve the public interest, while strict application of the buildout deadlines, for which PCSP had no reasonable alternative, would be inequitable, unduly burdensome, and contrary to the public interest. The Petition further showed that PCSP’s failure to commence service was due to causes beyond its control.

In denying the Petition, the Division based its decision on erroneous findings and statements. These statements – including that “PCSP seeks a waiver of its construction deadlines primarily to support its proposed IoT applications by transmitting MTC, with adjunct provision of

an M-LMS service”; that PCSP “requested removal of the M-LMS service restriction”; that “PCSP has not provided sufficient technical information addressing how its proposed system will transmit both MTC and M-LMS without causing interference between these different functions”; that PCSP “fails to clearly demonstrate in its filings how it would overcome the lack of commercially available equipment in the band ... to operate the proposed companion M-LMS service in conjunction with MTC transmissions”; that PCSP “omits the critical description of how these technical standards pertaining to IoT and GPS applications ... will permit it to operate its companion M-LMS system on its licensed spectrum as described in the Commission’s rules”; and that PCSP “fails to provide a sufficient technical demonstration as to how its operation would not adversely affect other users in the band” – on which the Division’s denial are based, are not supported by the record.

Grant of waiver would serve the public interest and is consistent with the purpose of the rules. However, in finding that PCSP did not satisfy the waiver standard, the Division failed to review all of the facts presented, balance those facts against the purposes underlying the rules, and consider alternative means through which PCSP could find relief. The Division further failed to articulate with clarity and precision its findings and reasons for its decision.

The Division also erred in finding that PCSP did not satisfy the showing for extension under the M-LMS rules. PCSP made clear that its failure to commence service is due to causes beyond its control, in particular a lack of commercially available equipment. Here too the *Order* fails to review all of the facts presented, balance those facts against the purpose underlying the construction deadlines adopted in the *2014 Extension Order*, or consider alternative means through which PCSP could find relief.

Finally, the Division acted arbitrarily and capriciously and otherwise contrary to law. The *Order* fails to fully and rationally consider the relevant facts presented in the record. Instead, the Division relied on erroneous factual premises to conclude that PCSP was not entitled to relief, while

failing to distinguish PCSP's circumstances from other decisions in which relief was granted, resulting in disparate treatment of PCSP.

Finally, the Commission “may take into account considerations of hardship, equity, or more effective implementation of overall policy on an individual basis,” and the Bureau should do so here. PCSP proceeded in good faith to follow the directives of the *2014 Extension Order*, and having identified a viable path forward requested expedited treatment. Since filing its Petition, PCSP has continued to make investments in its proposed solution, and apprised the Division of its efforts. Indeed, PCSP made substantial progress toward ultimate deployment. For all of the foregoing reasons, the Bureau should reconsider the *Order* and grant PCSP's request for extension or waiver of construction deadline and for waiver of Section 90.353(b), and reinstate PCSP's licenses.

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To: Chief, Wireless Telecommunications Bureau

PETITION FOR RECONSIDERATION

PCS Partners, L.P. (“PCSP”), by its attorneys and pursuant to Section 405(a) of the Communications Act of 1934, as amended, 47 U.S.C. § 405(a), and Section 1.106 of the Commission’s rules, 47 C.F.R. § 1.106, respectfully requests reconsideration of the Order of the Mobility Division (the “Division”) of the Wireless Telecommunications Bureau (“Bureau”) in the above-captioned proceeding,¹ which denies PCSP’s petition for waiver of Section 90.353(b) of the Commission’s rules and request for extension of time to complete buildout obligations associated with PCSP’s Multilateration and Location Monitoring Service (“M-LMS”) licenses.²

I. INTRODUCTION

In 2014, the Division granted PCSP a two-year extension of time “to make appropriate business decisions regarding [its] M-LMS licenses, including deployment of services or, if necessary,

¹ *Order*, DA 17-1125 (WTB MD, Nov. 20, 2017) (“*Order*”).

² Petition for Waiver of 47 C.F.R. § 90.353(b) and Request for Extension of Time and for Expedited Treatment, WT Docket No. 16-149 (filed Apr. 15, 2016) (“*Petition*”), Amendment to Petition for Waiver of 47 C.F.R. § 90.353(b) and Request for Extension of Time and for Expedited Treatment, WT Docket No. 16-149 (filed Aug. 19, 2016) (“*Amendment*”).

to engage in secondary markets transactions.”³ Specifically, the *2014 Extension Order* extended the interim and end-of-term deadlines for PCSP’s 32 M-LMS licenses until September 4, 2016 and September 4, 2018, respectively.⁴ According to the Division, “equipment capable of operating in the M-LMS band currently exists,”⁵ an apparent reference to proprietary equipment developed by Progeny LMS, LLC (“Progeny”).

PCSP informed the Division in 2014 that notwithstanding its statement that “equipment ... currently exists,” in fact Progeny’s equipment was unavailable to PCSP.⁶ PCSP also asked the Division to clarify its statements regarding availability of and access to equipment, and “secondary markets transactions.”⁷ Given the lack of clarity on these matters and the short window for meeting the buildout deadline, PCSP chose to pursue deployment of services, specifically including M-LMS, utilizing its licenses. Among other things, PCSP conducted a thorough study of market conditions relevant to M-LMS and assessed the viability of various technology solutions. PCSP concluded that no equipment exclusively for M-LMS was commercially available; that Progeny would not provide access to its proprietary technology; and that PCSP therefore would need to undertake development of its own equipment.

PCSP submitted its Petition in April 2016, after discussing its plans with the Division. The Petition requested a waiver of Section 90.353(b), which permits the transmission of either voice or non-voice “status and instructional messages” only if such messages are related to the location or monitoring functions of the system, in order to permit short, infrequent packet transmissions at

³ *Requests by FCR, Inc., Progeny LMDs, LLC, PCS Partners, L.P. and Helen Wong-Armijo for Waiver and Limited Extension of Time, Order*, 29 FCC Rcd 10361, ¶ 17 (WTB MD 2014), *Order on Reconsideration*, 32 FCC Rcd 556 (WTB MD 2017), *app. for review pending* (“*2014 Extension Order*”).

⁴ *See id.* at ¶ 18; *Order* at ¶ 5.

⁵ *2014 Extension Order* at ¶ 18.

⁶ PCS Partners, L.P. Petition for Partial Reconsideration and Clarification, WT Docket No. 12-202 (Sept. 29, 2014), at 15.

⁷ *Id.* at 20-21.

scheduled times utilizing equipment incorporating the 3rd Generation Partnership Project (“3GPP”) Long Term Evolution (“LTE”) standard.⁸ PCSP stated that it would deploy an LTE system capable of supporting both a trilateration-based M-LMS and machine type communication (“MTC”) for narrowband Internet of Things (“IoT”) applications and services.⁹ PCSP also proposed specific deployment milestones.¹⁰ Following Public Notice¹¹ of the Petition, PCSP addressed the substantive comments of all parties,¹² and in subsequent communications with Commission staff provided additional information in support of the Petition, including information responsive to staff requests.¹³

The Petition demonstrated that waiver would both further the underlying intent of the M-LMS rules and serve the public interest, while strict application of the deadlines set by the *2014 Extension Order*, for which PCSP had no reasonable alternative, would be inequitable, unduly burdensome, and contrary to the public interest.¹⁴ The Petition further showed that PCSP’s failure to commence service was due to causes beyond its control.¹⁵ Thus, the Petition fully satisfied the Commission’s standards for waiver and extension.

As shown below and in the attached Declaration of Nat Natarajan, Ph.D. (“Declaration”) of Roberson and Associates, PCSP’s engineering consultant, in denying the Petition the Division (1) based its decision on erroneous findings that are not consistent with the record; (2) erred in finding

⁸ Petition at 2.

⁹ Petition at 2-3; Amendment at 2.

¹⁰ Petition at 12-13; Amendment at 2.

¹¹ *Wireless Telecommunications Bureau Seeks Comment on PCS Partners Request for Multilateration Location and Monitoring Service Waiver and Construction Extension*, Public Notice, 31 FCC Rcd 4408 (May 4, 2016).

¹² WT Docket No. 16-149, Reply Comments of PCS Partners, L.P. (June 3, 2016) (“PCSP Reply Comments”).

¹³ WT Docket No. 16-149, PCSP Notice of *Ex Parte* Communication (filed Jun. 22, 2016) (“PCSP June 2016 *Ex Parte*”); PCSP Notice of *Ex Parte* Communication (filed Oct. 21, 2016); PCSP Notice of *Ex Parte* Communication (filed May 11, 2017) (“PCSP May 2017 *Ex Parte*”).

¹⁴ See Petition at 3-11; Amendment at 3-6.

¹⁵ See Petition at 13-14; Amendment at 6.

that PCSP did not satisfy the waiver standard, while failing to meet its own obligation to give the request a “hard look”; (3) erred in finding that PCSP did not satisfy the showing for extension under the M-LMS rules; and (4) acted arbitrarily and capriciously and otherwise contrary to law. On reconsideration, the Bureau should correct the factual and legal errors in the *Order*, reinstate PCSP’s M-LMS licenses, and extend the construction deadlines associated with those licenses.¹⁶

II. ARGUMENT

A. The Denial Is Based on Erroneous Statements that Are Not Consistent with the Record

The *Order* states that grant of waiver of Section 90.353(b) is not justified because PCSP seeks “a fundamental expansion of spectrum rights.”¹⁷ This statement, like numerous others in the *Order*, is not supported by the record and evidences a misunderstanding of fundamental aspects of the Petition. On reconsideration, the errors set forth below, on which the Division’s denial is based, must be corrected.

1. The *Order* states that “PCSP seeks a waiver of its construction deadlines primarily to support its proposed IoT applications by transmitting MTC, with adjunct provision of an M-LMS service,”¹⁸ and refers to PCSP’s “requested *removal* of the M-LMS service restriction.”¹⁹ These statements – not tethered to the record by any citations – are incorrect. The extension request applies whether PCSP provides only M-LMS, or both M-LMS and IoT. Furthermore, the record is clear that multilateration, as required by the M-LMS rules, would be integral, not secondary or “adjunct,” to PCSP’s operations. The Petition unambiguously states that PCSP “proposes to deploy an LTE system capable of

¹⁶ Reconsideration is appropriate where a petitioner shows “a material error or omission in the decision” or raises additional facts that were not previously known. *See, e.g., Comparative Consideration of 3 Groups of Mutually Exclusive Applications for Permits to Construct New Noncommercial Educational FM Stations*, 31 FCC Rcd 8007, ¶ 1 n.4 (2016).

¹⁷ *Order* at ¶ 15.

¹⁸ *Id.* at ¶ 16 (emphasis added).

¹⁹ *Id.* at ¶ 14 (emphasis added).

supporting *both* a trilateration-based M-LMS and [MTC],” and seeks to deploy “*LTE-based location and other services.*”²⁰ In its Reply Comments, PCSP reiterated that its proposal “can not only meet the primary original purpose of M-LMS (location determination and monitoring using a trilateration technique) but also utilize PCSP’s spectrum efficiently and productively by offering additional services for support of narrowband [IoT] applications.”²¹ Nothing in the record supports the finding that PCSP proposed M-LMS as an “adjunct” to other offerings or “requested removal of the M-LMS service restriction.”²²

2. The *Order* states that the Petition “*raises significant technical uncertainties. For example, PCSP has not provided sufficient technical information addressing how its proposed system will transmit both MTC and M-LMS without causing interference between these different functions.*”²³ A fair reading of the record should make it apparent that M-LMS transmissions and MTC transmissions will not interfere with one another. As PCSP explained, it proposes to deploy a system utilizing the 3GPP LTE standard for establishing location via trilateration and for packet communications.²⁴ As stated in the Petition, and confirmed by the attached Declaration, the LTE standard describes in detail how the two functions are integrated in the LTE radio access protocol.²⁵ As Dr. Natarajan explains, there is “no potential for interference to occur within a single LTE system serving LMS and IoT applications since transmissions are scheduled (and not based on random access protocols).”²⁶

²⁰ Petition at 2 (emphasis added), 14; Amendment at 7.

²¹ PCSP Reply Comments, Attachment 1 at 4. *See also* Declaration at ¶ 12; PCSP June 2016 *Ex Parte* at 2.

²² Moreover, in response to a commenter’s unsupported claim that PCSP does not intend to offer a competitive M-LMS service or to provide M-LMS at all, PCSP reiterated its intent to provide M-LMS as a competitive alternative, and that its proposed solution would allow the provision of M-LMS in a more spectrally efficient manner than the configuration mandated by current rules. PCSP Reply Comments at 7 (citing Petition at 4, 5-6).

²³ *Order* at ¶ 15.

²⁴ Petition at 2, 7, 10; PCSP Reply Comments, Attachment 1 at 4.

²⁵ Petition at 10; Amendment at 2.

²⁶ *See* Declaration at ¶ 6; *see also* Petition at n.22 (“The PCSP solution has sufficient flexibility in its

3. The *Order* states that PCSP “*fails to clearly demonstrate in its filings how it would overcome the lack of commercially available equipment in the band ... to operate the proposed companion M-LMS service in conjunction with MTC transmissions.*”²⁷ However, PCSP made clear that the lack of commercial equipment described in the record refers to equipment dedicated solely to location determination under the 1995 M-LMS rules, not to the equipment it is planning to deploy in its buildout.²⁸ As stated in the Petition, PCSP plans to modify standard LTE-based equipment that already operates in non-M-LMS bands.²⁹ All operational parameters and specifications, with the exception of the frequency of operation, currently exist.³⁰ In fact, PCSP informed the Division that it had engaged equipment vendors who have the capability to make the modifications, including straightforward changes to the RF front-end design, in order to re-band commercial equipment required for operation in PCSP’s licensed frequencies.³¹

4. The *Order* states, “[a]lthough PCSP generally alludes to LTE Release 13 features that it claims will allow it to deploy its system, it omits the critical description of how these technical standards pertaining to IoT and GPS applications – neither of which use multi-lateration as described in the M-LMS service rules to triangulate location – will permit it to operate its companion M-LMS system on its licensed spectrum as described in the Commission’s rules.”³² Contrary to this statement, the Petition clearly stated that multilateration capability required by the M-LMS rules is described in and is an integral part of LTE Release 13.³³

smart scheduler function to vary the duty cycle in response to traffic demand....”).

²⁷ *Order* at ¶ 15. To the extent the *Order* uses “companion” in this context as a synonym for “adjunct,” it is not accurate or consistent with the record, as stated above.

²⁸ Petition at 11.

²⁹ See Petition at 4-5 (noting plan to incorporate 3GPP LTE Release 13 in equipment for M-LMS bands); PCSP Reply Comments, Attachment 1 at 4 (discussing characteristics of proposed devices); PCSP June 2016 *Ex Parte* at 2 (reiterating plan to use equipment incorporating 3GPP LTE standard to provide both M-LMS and narrowband IoT offerings, and discussions with equipment vendors).

³⁰ See Declaration at ¶ 11.

³¹ See Declaration at ¶ 11; PCSP June 2016 *Ex Parte* at 2; PCSP May 2017 *Ex Parte* at 4.

³² *Order* at ¶ 15.

³³ Petition at 5; PCSP June 2016 *Ex Parte* at 2.

As noted in the Petition, the LTE standard uses the Observed Time Difference of Arrival (“OTDOA”) multilateration method, which as defined in Release 13 is an integral part of the LTE over-the-air frame structure and signaling protocol. Thus, PCSP’s proposed deployment satisfies the M-LMS service rules and simultaneously provides the ability to provide IoT services, which include both location and location-based monitoring capability.³⁴ Moreover, GPS is not part of Release 13, and the Petition did not make such a statement.³⁵

5. The *Order* states that “PCSP’s general technical information on LTE Release 13 fails to provide a sufficient technical demonstration as to how its operation would not adversely affect other users in the band. In particular, PCSP is silent regarding how its proposed system will protect primary federal users or operate on a secondary basis to ISM operations.”³⁶ This statement ignores critical portions of the record.

First, PCSP’s purported failure to demonstrate no “adverse[] affect [on] other users in the band” ignores the fact that PCSP has not proposed any operation that would “adversely affect” other band users. Moreover, the statement posits a standard that is not consistent with the M-LMS rules.

Second, with respect to Federal Government fixed and mobile radiolocation services and Industrial, Scientific, and Medical (“ISM”) devices in the 902-928 MHz band, PCSP has acknowledged that M-LMS operations are secondary to such operations,³⁷ and that under Section 90.353(a) of the rules it must tolerate interference from, and not cause interference to, such primary users.³⁸ PCSP is not aware of any obligation to demonstrate at the equipment development stage that M-LMS transmissions would not “adversely affect” primary users. Certainly, no such obligation attached to Progeny LMS, LLC (“Progeny”) when it sought and was granted a waiver of technical

³⁴ See Declaration at ¶ 7.

³⁵ See *id.* at ¶ 7 n.3.

³⁶ *Order* at ¶ 15.

³⁷ Petition at n.8.

³⁸ *Id.* at 8.

requirements set forth in Sections 90.155(e) and 90.353(g) of the rules.³⁹ Notably, as was the case with Progeny’s waiver request, no Federal or ISM user of the M-LMS bands objected to PCSP’s Petition, reflecting their likely understanding of the negligible risk of interference posed by PCSP’s proposed operations. As to IoT traffic, as PCSP has noted, its system will protect primary allocation users through the base station scheduler function to reduce the amount of bandwidth used for such traffic.⁴⁰ As Dr. Natarajan concludes, “the proposed system has very little potential for causing interference to other users of the 902-928 MHz band.”⁴¹

Third, with respect to Part 15 devices, there is no requirement that an M-LMS licensee demonstrate that its proposed operation would not “adversely affect” such equipment.⁴² Rather, the rules require a licensee to “demonstrate through actual field tests that their systems do not cause unacceptable levels of interference” to Part 15 devices that operate in the 902-928 MHz band on a secondary basis to M-LMS.⁴³ As the Commission has stated, “the purpose of the field test is to promote the coexistence of M-LMS and unlicensed operations in the band by ‘minimizing’ – not eliminating – the potential for M-LMS interference to Part 15 operations overall so that the band can continue to be used for unlicensed operations without significant detrimental impact, consistent with their Part 15 [i.e., secondary] status.”⁴⁴ Moreover, PCSP did explain the technical basis for its conclusion that its proposed operations, both M-LMS and IoT transmissions, are unlikely to cause

³⁹ *Request by Progeny LMS, LLC for Waiver of Certain M-LMS Rules, Progeny LMS, LLC Demonstration of Compliance with Section 90.353(d) of the Commission’s Rules*, Order, 26 FCC Rcd 16878 (WTB/OET 2011) (“*Progeny Waiver Order*”).

⁴⁰ See Declaration at ¶ 8.

⁴¹ *Id.* at ¶ 8.

⁴² For reasons PCSP explained (Petition at 7-8; PCSP Reply Comments, Attachment 1 at 3, 5; and see Declaration at ¶ 8), which no party refuted, the effect of PCSP’s proposed operations should be no different than the operations approved for Progeny, which was not required to demonstrate no “adverse effects.”

⁴³ 47 C.F.R. § 90.353(d).

⁴⁴ *Request by Progeny LMS, LLC for Waiver of Certain M-LMS Rules, Progeny LMS, LLC Demonstration of Compliance with Section 90.353(d) of the Commission’s Rules*, Order, 28 FCC Rcd 8555, ¶ 19 (2013).

any interference (much less an “unacceptable level” or a level that would constitute an “adverse affect”) to Part 15 users, while repeatedly affirming its field testing obligation.⁴⁵ PCSP provided a coexistence analysis, separate from a general description of the LTE Release 13, demonstrating that its proposed network will not cause unacceptable levels of interference.⁴⁶ Indeed, coexistence with Part 15 users was a primary focus of PCSP’s Reply Comments⁴⁷ as well as subsequent *ex parte* communications.⁴⁸

6. The Order states, “[w]ith respect to unlicensed users, PCSP does not adequately address how supporting IoT applications in addition to M-LMS as proposed would alleviate the potential impact on Part 15 users. For example, PCSP speculates that the impact on Part 15 users will be minimal, as the interference caused by its system would only happen for very short periods of time. In support, PCSP provides a hypothetical model while cautioning the Commission that it is ‘not to be taken literally as a prediction of future traffic patterns,’ which is insufficient to demonstrate that waiver is warranted.”⁴⁹ In fact, the models PCSP used in its Petition to assess coexistence are based on use cases and interference scenarios fully representative of those expected in the operation of the proposed system, and based on the best information available. The scenarios demonstrated that any potential interference would be minimal and transient; the record is clear that the 1.4 MHz bandwidth usage per cell site and the flexible duty cycle that is a feature of

⁴⁵ Petition at 7-8; PCSP Reply Comments at 5-7, 8-10 and Attachment 1 at 3-8.

⁴⁶ See Petition at 7-8; see also Declaration at ¶¶ 6-10.

⁴⁷ PCSP Reply Comments at 4-7, 8-10 and Attachment 1 at 3-8. Six parties responded to the Bureau’s request for public comment on the Petition. The sole focus of each commenter was potential impact of PCSP’s proposed operations on Part 15 devices. See PCSP Reply Comments at 2 n.2. Notwithstanding commenters’ purported concerns, none claimed that its equipment, customers, or members in fact use any portion of M-LMS frequencies in any geographic area licensed to PCSP; only one asserted that its equipment utilizes M-LMS frequencies in any portion of the United States; and none supplied any technical information about their operations. *Id.* at 2; see Comments of Starkey Hearing Technologies at 2. PCSP fully responded to their concerns. See PCSP Reply Comments at 3-8 and Attachment 1.

⁴⁸ See PCSP June 2016 *Ex Parte* at 1-2; PCSP May 2017 *Ex Parte* at 4 (describing PCSP’s discussions with Part 15 stakeholders).

⁴⁹ Order at ¶ 15. Like “adversely affect,” “alleviat[ing] potential impacts” is a standard not based on Commission rules or precedent.

the proposed solution provide reasonable assurance that PCSP's operations will cause no "unacceptable levels of interference" to Part 15 devices, while the required "actual field testing" will serve its intended "backstop" function.⁵⁰ Far from being speculative, PCSP's hypothetical was a direct comparison to the system the Commission already has approved for Progeny.⁵¹

7. The *Order* states, "[s]ince the Commission's 1995 adoption of the M-LMS band plan, licensees have been restricted to providing location-based services with an unambiguous prohibition against providing services for general messaging purposes."⁵² However, the rules permit transmission not just for location but also for monitoring,⁵³ including transmissions from objects being monitored.⁵⁴ PCSP's proposed system will provide location-based IoT services that are fundamentally for machine-to-machine communications.⁵⁵ Person-to-person general messaging service is not within the scope of the Petition; moreover, the LTE protocol proposed for deployment is not suited to person-to-person general messaging applications.

In sum, the *Order*'s conclusory statement that "PCSP has not met its burden of providing sufficient and concrete technical information in its request about its proposed system that would establish a valid basis for granting a waiver"⁵⁶ is neither a fair nor accurate reading of the record, and must be reconsidered in light of the errors discussed above.

⁵⁰ See, e.g., Petition at 8; PCSP Reply Comments at 7 and Attachment; PCSP June 2016 *Ex Parte* at 2. See also Declaration at ¶ 9. One commenter expressly acknowledged that PCSP stated its intent to comply with field testing requirement. See PCSP Reply Comments at 7.

⁵¹ See Petition at n.22; Declaration at ¶¶ 8, 10.

⁵² *Order* at ¶ 13 & n.73.

⁵³ 47 C.F.R. § 90.353(b).

⁵⁴ 47 C.F.R. § 90.353(c).

⁵⁵ See Declaration at ¶ 10.

⁵⁶ *Order* at ¶ 15.

B. The Division Erred in Finding that the Waiver Standard Is Not Satisfied, While Failing to Give the Waiver Request a “Hard Look”

The Commission may grant a waiver “if it is shown that: (i) the underlying purpose of the rule(s) would not be served or would be frustrated by application to the instant case, and that a grant of the requested waiver would be in the public interest; or (ii) in view of the unique or unusual factual circumstances of the instant case, application of the rule(s) would be inequitable, unduly burdensome or contrary to the public interest, or the applicant has no reasonable alternative.”⁵⁷ Further, the Commission may waive a rule “where the particular facts make strict compliance inconsistent with the public interest, and may take into account considerations of hardship, equity, or more effective implementation of overall policy on an individual basis.”⁵⁸

When considering a waiver request, the Bureau “must give [the] request a ‘hard look,’ in contrast to a perfunctory denial, by articulating *with clarity and precision* its findings and reasons for its decision.”⁵⁹ This obligation “ensure[s] that the agency is not rigidly applying a rule where it is not in the public interest.”⁶⁰ While such principles “are not easily reduced to a quantifiable formula for deciding when an agency disposing of a waiver application has crossed the line from the tolerably terse to the intolerably mute,”⁶¹ the “hard look” requirement is satisfied if the Bureau “review[s] all of the facts presented, balance[s] those facts against the purposes underlying the [rule for which the waiver was sought], and consider[s] alternative means through which [the licensee] could find relief.”⁶²

⁵⁷ 47 C.F.R. § 1.925(b). See *T-Mobile License LLC, Request for Waiver of Section 27.14(g)(1)*, Memorandum Opinion and Order, FCC 17-163, ¶ 11 (Dec. 13, 2017).

⁵⁸ *T-Mobile License LLC*, FCC 17-163 at 13 (citations omitted).

⁵⁹ *Application for Review of Bellsouth Wireless, Inc., Order*, 12 FCC Rcd 14031, 14037 (1997) (citing *WAIT Radio v. FCC*, 418 F.2d 1153, 1157 (D.C. Cir. 1969) (emphasis added)).

⁶⁰ *Delta Radio, Inc., v. FCC*, 387 F.3d 897, 900 (D.C. Cir. 2004).

⁶¹ *WAIT Radio v. FCC*, 418 F. 2d at 1157.

⁶² *Bellsouth Wireless*, 12 FCC Rcd at 14037.

The Petition was “stated with clarity and accompanied by supporting data.”⁶³ PCSP showed that a waiver would both further the underlying intent of the M-LMS rules and serve the public interest, explaining that a waiver will, among other benefits, result in innovative and efficient use of PCSP’s licensed spectrum, enhance competition, innovation, and rapid deployment, and benefit consumers.⁶⁴ These benefits – including innovative and efficient use of the PCSP spectrum (which currently is not being used to provide any service authorized under the M-LMS rules), and the offering of both a new competitive location and monitoring service and additional applications and services to consumers, business, public safety and other entities (thereby “increas[ing] competition and consumer choice”⁶⁵) – have not been disputed. The Petition also showed that application to PCSP of Section 90.353(b) and of the buildout requirements adopted in the *2014 Extension Order*, for which PCSP has no reasonable alternative, would be inequitable, unduly burdensome, and contrary to the public interest.⁶⁶ Consequently, the Commission’s “general obligation of reasoned decisionmaking”⁶⁷ is fully applicable to the Petition.

The *Order* fails the hard look requirement. Its superficial response to PCSP’s waiver showing is “intolerably mute” and does not “articulat[e] with clarity and precision its findings and reasons for its decision.”⁶⁸ While the *Order* responds substantively to the entire record in just four terse paragraphs,⁶⁹ it is silent regarding PCSP’s showing under Section 1.925(b). The *Order* fails to explain why “strict rule application serves the public interest.”⁷⁰ It fails to acknowledge that PCSP has no

⁶³ *New Orleans Channel 20, Inc. v. FCC*, 830 F.2d 361, 367 (D.C. Cir. 1987).

⁶⁴ Petition at 4-9; Amendment at 3-4, 5-6. Another M-LMS licensee agreed that waiver would enable the deployment of beneficial new technologies. See WT Docket No. 16-149, Comments of Skybridge Spectrum Foundation and Telesaurus Holdings GB, LLC, at 3 (filed May 24, 2017).

⁶⁵ *T-Mobile License LLC*, FCC 17-163 at ¶ 14.

⁶⁶ Petition at 9-11; Amendment at 6.

⁶⁷ *New Orleans Channel 20, Inc. v. FCC*, 830 F.2d at 367 (citing *WAIT Radio v. FCC*).

⁶⁸ *Bellsouth Wireless*, 12 FCC Rcd at 14037.

⁶⁹ *Order* at ¶¶ 13-16.

⁷⁰ *Delta Radio, Inc. v. FCC*, 387 F.3d at 901 (citation omitted).

“reasonable alternative”. Nor does it review all of the facts presented, balance those facts against the purposes underlying Section 90.353, or consider alternative means through which PCSP could find relief.⁷¹ It does not “explain itself in enough detail so that a court can determine ‘the why and wherefore’ of the denial – explaining, for example, why strict rule application serves the public interest.”⁷² On reconsideration, the Bureau must find that waiver is justified, consistent with prior decisions where it has considered the entire record and engaged in reasoned decision-making.

C. The Division Erred in Finding that Extension Should Not Be Granted

Under the M-LMS rules, extensions of construction deadlines “will be granted only if the licensee shows that the failure to commence service is due to causes beyond its control.”⁷³ The Petition made clear that PCSP’s inability to commence service by the deadlines established in the 2014 *Extension Order* was due to causes beyond its control – in particular a lack of commercially available equipment.⁷⁴ However, the *Order’s* response to PCSP’s request to waive and extend those deadlines is just as flawed as its response to PCSP’s showing with respect to waiver of Section 90.353(b).⁷⁵

As shown above, the *Order* is not correct that “PCSP seeks a waiver of its construction deadline primarily to support its proposed IoT applications....”⁷⁶ Next, the *Order* states, “[a]s we have denied PCSP’s request for waiver of the location service requirement [*sic*] and PCSP provides no justification for affording relief to deploy a standalone M-LMS system, a solution PCSP

⁷¹ *Bellsouth Wireless*, 12 FCC Rcd at 14037.

⁷² *Delta Radio, Inc. v. FCC*, 387 F.3d at 901 (citation omitted).

⁷³ 47 C.F.R. § 90.155(g).

⁷⁴ Petition at 13.

⁷⁵ Although the Division notes that it previously stated that it would not grant future extensions even for reasons beyond a licensee’s control, *see Order* at n.28, it nonetheless has an obligation to “evaluate each case based on the specific circumstances that are presented.” *T-Mobile License LLC*, FCC 17-163 at ¶ 11.

⁷⁶ *Order* at ¶ 16.

repeatedly claims is not feasible,⁷⁷ we find that a waiver of the construction requirements would be contrary to both the public interest and underlying purpose of the rule, which is ‘to ensure that M-LMS licensees use spectrum to provide location-based services to consumers.’”⁷⁸ But PCSP did not seek waiver “of the location service requirement.” Nor did PCSP claim it could not deploy a standalone M-LMS system; it asserted only that there is no commercially available equipment to deploy such a system, while demonstrating that it is pursuing an alternative. Thus, a waiver in fact would satisfy not only the cited purpose of the rule, but also the statutory purpose of performance requirements generally, which are “designed to ‘promote delivery of service to rural areas, ... prevent stockpiling or warehousing of spectrum by licensees ... and promote investment in and rapid deployment of new technologies and services.’”⁷⁹ The *Order* also ignores the public interest benefits of a waiver, which were not disputed in the record. Here too the *Order* fails to review all of the facts presented, balance those facts against the purpose underlying the construction deadlines adopted in the 2014 *Extension Order*, or consider alternative means through which PCSP could find relief.

The *Order* “find[s] that PCSP’s failure to take concrete actions to develop or deploy an M-LMS system, or to commence any service, is not due to causes outside its control and is the result of voluntary business decisions, particularly given our prior statement that ‘it would be contrary to the public interest to grant extension requests in perpetuity where our build-out requirements have not been met.’ It is well-established that circumstances created by voluntary business decisions do not

⁷⁷ The *Order* (at n.88) cites the Petition (at 11) for this proposition. In fact, PCSP was demonstrating that waiver is appropriate because it would be unduly burdensome for PCSP to provide a stand-alone location position service or to further delay implementation of its proposal while waiting for market conditions or technology solutions to change.

⁷⁸ *Order* at ¶ 16 (quoting *Progeny LMS, LLC Request for Waiver and Limited Extension of Time*, 32 FCC Rcd 122, ¶ 28 (2017)).

⁷⁹ *National EBS Association and Catholic Television Network*, 26 FCC Rcd 4021, ¶ 12 (WTB 2011) (quoting 47 U.S.C. § 309(j)(4)(B)).

justify an extension of construction deadlines.”⁸⁰ This “finding” comprises a jumble of errors:

- PCSP in fact has taken concrete actions to develop and deploy an M-LMS system; consequently, this “finding” is premised on the *Order*’s failure to acknowledge that M-LMS is integral to PCSP’s system.
- The “finding” is merely an unsupported conclusion: the *Order* cites no business decision purportedly made by PCSP that caused it to *not* timely commence service. Nor would it be possible for the Division to base such a “finding” on the record, which plainly shows that PCSP made business decisions with the goal of deploying M-LMS. There simply are no facts to support such a “finding.” Unable to locate an actual business decision, the *Order* claims that “PCSP’s failure to take concrete actions to develop or deploy an M-LMS system, or to commence any service” is the “*result of* voluntary business decisions.”⁸¹ With this tortured construction, the Division “display[s] evident disregard for its precedents”⁸² regarding what constitutes a voluntary business decision.⁸³
- Tying the “finding” to the quoted language in the *2014 Extension Order* is both inapt (because PCSP in fact did what the *Order* says it did not) and meaningless (because if a party met its buildout requirements, it would have no need to seek further extensions, much less extensions “in perpetuity”).
- The assertion that “[i]t is well-established that circumstances created by voluntary business decisions do not justify an extension of construction deadlines”⁸⁴ simply does not apply to the record of this proceeding. **The *Order* cites no business decision taken by PCSP that resulted in PCSP’s inability to meet the deadlines established in the *2014 Extension Order*.** In stark contrast, what **is** well-established is that where there is evidence of an actual business decision concerning available equipment, a licensee could not successfully claim that its failure to meet a buildout deadline was due to causes beyond its control. This was the result where the Bureau found that equipment was available in some, but not all, of the licensee’s markets⁸⁵; where some but not all licensees within a particular service constructed with commercially available equipment⁸⁶; where equipment was commercially available but the licensee chose to wait for the development of other equipment based on a yet-to-be developed standard⁸⁷;

⁸⁰ *Order* at ¶ 16 (quoting *2014 Extension Order* at ¶ 17).

⁸¹ *Id.* at ¶ 16 (emphasis added).

⁸² *New Orleans Channel 20, Inc. v. FCC*, 830 F.2d at 366.

⁸³ Relevant precedent regarding what constitutes a voluntary business decision in circumstances in which there is, or is not, commercially available equipment, is discussed below at pp. 15-16 and 19-21. Because the *Order* is “so inconsistent with its precedent as to constitute arbitrary treatment amounting to an abuse of discretion,” *New Orleans Channel 20, Inc. v. FCC*, 830 F.2d at 366 (citing *Melody Music, Inc. v. FCC*, 345 F.2d 730, 732-33 (D.C. Cir. 1965), it must be reconsidered.

⁸⁴ *Order* at ¶ 16.

⁸⁵ See *Alligator Communications, Memorandum Opinion and Order*, 30 FCC Rcd 2823, ¶ 10 (WTB BD 2015).

⁸⁶ See *id.* at ¶ 11.

⁸⁷ See *Great River Energy, Memorandum Opinion and Order*, 30 FCC Rcd 2829, ¶ 9 (WTB BD 2015).

where a licensee acknowledged that equipment was available and the Commission confirmed that by searching its equipment authorization records⁸⁸; where, although equipment problems “played an important role in granting extension” years earlier, equipment in fact was commercially available at the time of extension request but the licensee chose to build out certain markets but not others because it did not want to “squander its financial resources”⁸⁹; where the “primary rationale for not moving forward on providing service [was] that it was not economically feasible”⁹⁰; where a licensee decided “to wait for its desired equipment” although other equipment was available⁹¹; where a licensee acquired licenses in one service hoping to use them to provide service in connection with a different band, rules for which had not been finalized when the licenses were acquired⁹²; and where a licensee chose to “seek relief in lieu of deploying available equipment.”⁹³ In contrast to these decisions, the Commission repeatedly has recognized that because a licensee cannot obtain that which does not exist, a lack of commercially available equipment is not a voluntary business decision but rather a cause beyond the licensee’s control.⁹⁴ In no decision has the Commission found lack of equipment to be a circumstance within the control of a licensee.

- The *Order* posits a fabricated and inapposite “public interest” test. PCSP has not requested extensions “in perpetuity” and the *Order* cites no such request. In fact, **PCSP has sought an extension only since 2014** – hardly “in perpetuity.” But the *Order* does not acknowledge this. While the Division admits that “regulatory uncertainty” lasted for the eight years that the 2006 NPRM was pending,⁹⁵ incredibly it fails to credit other relevant facts, including that the 2006 NPRM was released less than three years after grant of PCSP’s licenses, prior to its first-ever buildout deadline (but after repeated extensions of construction deadlines granted to other M-LMS licensees for causes

⁸⁸ See *Longhorn Communications Inc. Request for Waiver or Extension of Time to Construct*, Order, 29 FCC Rcd 8200, ¶ 9 (2014).

⁸⁹ See *FiberTower Spectrum Holdings LLC*, Memorandum Opinion and Order, 28 FCC Rcd 6822, ¶¶ 21-23 (2013). In addition, the Bureau found that FiberTower had completed “some level of actual construction as of the deadline,” had previously made substantial service showings that were accepted by the Commission, and had acknowledged that it had acquired a substantial amount of viable network equipment; and that the Bureau received more than 300 construction notifications from other licensees in the band who constructed stations. *FiberTower Spectrum Holdings LLC*, 27 FCC Rcd 13562, ¶¶ 2, 27 (WTB 2012).

⁹⁰ *Communication Specialists of Wilmington, LLC*, 27 FCC Rcd 7638 (WTB MD 2012).

⁹¹ *Cornerstone SMR, Inc., Applications for Renewal of Licenses in the 2200 MHz Band*, Order, 27 FCC Rcd 5900, ¶ 19 (WTB MD 2012).

⁹² See *Metropolitan Area Networks, Inc.*, Order on Reconsideration and Memorandum Opinion and Order, 27 FCC Rcd 3826, ¶ 11 (WTB BD 2012).

⁹³ *Douglas SMR Works, Inc.*, 24 FCC Rcd 8596 (WTB MD 2009).

⁹⁴ See Section II.D.2, *infra*.

⁹⁵ *Order* at ¶ 5 (citing *Amendment of the Commission’s Part 90 Rules in the 904-909.75 and 919.75-928 MHz Bands*, WT Docket No. 06-49, Notice of Proposed Rulemaking, 21 FCC Rcd 2809 (2006) (“2006 NPRM”). The 2006 NPRM found that “current M-LMS rules place significant restrictions on M-LMS operation,” and proposed “rule changes that could facilitate higher-value licensed use the spectrum in the M-LMS bands.” *Id.* at ¶¶ 3, 18.

beyond their control);⁹⁶ that the *2014 Extension Order* followed shortly after the Commission terminated the *2006 NPRM*; and that the buildout deadlines **did not exist until the *2014 Extension Order***.⁹⁷ Under these circumstances, any suggestion that PCSP has received lengthy extensions is simply inconsistent with the facts.⁹⁸ Furthermore, there now is evidence that notwithstanding the stated justification for the deadlines created in the *2014 Extension Order* that “equipment capable of operating in the M-LMS band currently exists,”⁹⁹ it now is apparent that in fact equipment capable of operating on PCSP’s A Block M-LMS spectrum **did not** “currently exist”.¹⁰⁰

Because “[i]n general, performance requirements are designed to ‘ensure delivery of service to rural areas, ... prevent stockpiling or warehousing of spectrum by licensees ... and promote investment in and rapid deployment of new technologies and services,’”¹⁰¹ waiver is fully consistent with the purpose of the buildout rule and would serve the public interest. A “rule is more likely to be undercut if it does not in some way take into account considerations of hardship, equity, or more effective implementation of overall policy, considerations that an agency cannot realistically ignore, at least on a continuing basis.”¹⁰² Here, the Division’s stance with respect to an unreasonable buildout deadline serves only to undercut the purpose of the M-LMS rules. PCSP has “shown that

⁹⁶ See, e.g., *Request of Progeny LMS, LLC for a Three-Year Extension of the Five-Year Construction Requirement for its Multilateration Location and Monitoring Services Economic Area Licenses*, Memorandum Opinion and Order, 21 FCC Rcd 5928, 5931-32, ¶¶ 12-13 (WTB 2006).

⁹⁷ One month after the Commission abruptly terminated the *2006 NPRM* (without notice) in June 2014, *Amendment of the Commission’s Part 90 Rules in the 904-909.75 and 919.75-928 MHz Bands*, Order, 29 FCC Rcd 6361 (2014), PCSP renewed its request for extension and waiver. See ULS File No. 0006384500 (July 18, 2014).

⁹⁸ Compare *National EBS Association and Catholic Television Network*, 26 FCC Rcd 4021, ¶ 9 (WTB 2011) (finding that “the five year buildout period was squeezed into a year or two or even less.”) Here too, given the undisputed regulatory uncertainty and circumstances beyond PCSP’s control that existed prior to the *2014 Extension Order*, PCSP effectively received only a two-year buildout period, substantially less than the period accorded by the M-LMS rules.

⁹⁹ *2014 Extension Order* at ¶ 18.

¹⁰⁰ See WT Docket No. 12-202, *Request of Progeny LMS, LLC for Waiver and Limited Extension of Time*, Petition for Reconsideration of Progeny LMS, LLC (Feb. 16, 2017), at 6 (seeking reconsideration of denial of extension of time to construct its A Block licenses, Progeny conceded that it “has not yet completed all of the same development measures for its A Block licenses that it has for its other licenses. Progeny delayed some measures for justifiable reasons that were explained to Division staff.”).

¹⁰¹ *National EBS Association*, 26 FCC Rcd 4021 at ¶ 12 (quoting 47 U.S.C. § 309(j)(4)(B)).

¹⁰² *WAIT Radio v. FCC*, 418 F.2d at 1159.

the failure to commence service is due to causes beyond its control.”¹⁰³ Consequently, it is deserving of an extension under the express language of the M-LMS rules.

Finally, PCSP reiterates that the Commission “may take into account considerations of hardship, equity, or more effective implementation of overall policy on an individual basis.”¹⁰⁴ On reconsideration, the Bureau should do so here. PCSP proceeded in good faith to follow the directives of the *2014 Extension Order*, and having identified a viable path forward requested expedited treatment of its request.¹⁰⁵ During the nineteen months the Division considered its request, PCSP continued to make investments in its proposed solution, and apprised the Division of its efforts.¹⁰⁶ Indeed, PCSP made substantial progress toward ultimate deployment, engaging equipment vendors who have the capability to make the modifications required for operation in PCSP’s licensed M-LMS band frequencies. PCSP also has retained a wireless engineering firm for the purpose of testing and development of network infrastructure equipment for use in PCSP’s M-LMS spectrum, with a goal of conducting coexistence testing on the spectrum within one year.

D. The *Order* Is Arbitrary and Capricious and Otherwise Contrary to Law

The *Order* fails to fully and rationally consider the relevant facts presented in the record and is arbitrary and capricious. An agency is required by law to “examine the relevant data and articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made.”¹⁰⁷ As noted, the Division relied on erroneous factual premises to conclude that PCSP was not entitled to relief, while failing to distinguish PCSP’s circumstances from other decisions in which relief was granted.

¹⁰³ 47 C.F.R. § 90.155(g).

¹⁰⁴ *T-Mobile License LLC*, FCC 17-163 at ¶ 13 (citations omitted).

¹⁰⁵ Petition at n.35; Amendment at 2.

¹⁰⁶ See, e.g., PCSP June 2016 *Ex Parte*; PCSP May 2017 *Ex Parte*.

¹⁰⁷ *Motor Vehicle Mfrs. Ass’n of U.S. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983).

1. The *Order* Rests on Numerous Erroneous Factual Premises

As discussed above in Section II.A, the *Order* is premised on numerous faulty factual premises that are not supported by substantial evidence, making the decision arbitrary and capricious.¹⁰⁸ To reiterate, contrary to the *Order*, (i) PCSP does not “seek[] a waiver of its construction deadlines primarily to support its proposed IoT applications by transmitting MTC, with adjunct provision of an M-LMS service,” or seek “removal of the M-LMS service restriction”,¹⁰⁹ (ii) PCSP in fact provided sufficient technical information regarding how its proposed system is capable of transmitting both M-LMS and MTC without creating interference between these functions; (iii) PCSP did explain how it would obtain equipment; and (iv) PCSP explained how it would comply with the rules regarding coexistence with other band users.¹¹⁰ The *Order*’s contrary statements, as discussed above, reflect a fundamental misunderstanding of the record that warrants reconsideration.

2. The *Order* Fails to Account for Disparate Treatment of Similarly Situated Parties

In considering PCSP’s request for relief, the Commission is obligated either to treat PCSP the same as similarly situated parties or to provide an explanation for disparate treatment.¹¹¹ Here, the Division failed to articulate any justification for denying PCSP’s Petition when it has granted relief in virtually identical circumstances.¹¹²

¹⁰⁸ *FiberTower Spectrum Holdings, LLC v. FCC*, 782 F.3d 692, 700 (D.C. Cir. 2015); *Center for Auto Safety v. Federal Highway Administration*, 956 F.2d 309, 314 (D.C. Cir. 1992).

¹⁰⁹ Compare *Order* at ¶¶ 16, 14.

¹¹⁰ Compare *Order* at ¶ 15.

¹¹¹ *Melody Music, Inc. v. FCC*, 345 F.2d 730, 732-33 (D.C. Cir. 1965); *Petroleum Communications, Inc. v. FCC*, 22 F.3d 1164, 1172-73 (D.C. Cir. 1994).

¹¹² See, e.g., *Requests of Ten Licensees of 191 Licenses in the Multichannel Video and Data Distribution Service for Waiver of the Five-Year Deadline for Providing Substantial Service*, *Order*, 25 FCC Rcd 10097, ¶ 10 (WTB 2010) (emphasis added) (“the record demonstrates that there is a lack of viable, affordable equipment for MVDDS that can be deployed.... Accordingly, we conclude that Licensees have met the requirements of Section 1.946(e) because **it is well-established that the lack of viable,**

It is well established that if a licensee demonstrates that it has “faced factors beyond [its] control, including difficulties in obtaining viable, affordable equipment,”¹¹³ such circumstances “have limited [its] options in providing service”¹¹⁴ and justify additional time to satisfy a buildout obligation. Thus, the Commission has acknowledged causes beyond a licensee’s control where the equipment market failed to “develop as anticipated”¹¹⁵ with “equipment vendors [being] unable to offer [licensees] any timetable for when affordable equipment may become available”¹¹⁶; where restrictive technical regulations “impeded the development of equipment and contributed to the unique circumstances of the band”¹¹⁷; and where characteristics of the spectrum band “require[e] development and manufacture” of new equipment.¹¹⁸ The *Order* fails to distinguish¹¹⁹ any of these

affordable equipment is a factor beyond a licensee's control. In considering equipment availability, we note the distinction between cost-prohibitive “prototype” equipment and viable, affordable, commercially available equipment. We further find that, given the lack of viable, affordable equipment, there is no reason to conclude that re-auctioning the licenses would result in more expeditious build out than allowing the Licensees to continue their efforts towards deployment. Under these circumstances, we determine that strict enforcement of the five-year buildout deadline would tend to slow, rather than accelerate, equipment development and service deployment.”).

¹¹³ *Applications Filed by Licensees in the Local Multipoint Distribution Serv. (LMDS) Seeking Waivers of Section 101.1011 of the Commissions Rules & Extensions of Time to Construct & Demonstrate Substantial Serv., Memorandum Opinion and Order*, 23 FCC Rcd 5894, ¶ 24 (WTB 2008) (“*LMDS Waiver Order*”). Here, the Bureau granted an extension in part because available, developed, equipment was cost-prohibitive. *Id.* at ¶ 5. In contrast, PCSP has not claimed that *affordable* equipment is unavailable, but rather that *no* equipment has been commercially available.

¹¹⁴ *In the Matter of Consol. Request of the WCS Coal. for Ltd. Waiver of Constr. Deadline for 132 WCS Licenses, Order*, 21 FCC Rcd 14134, ¶ 9 (WTB 2006) (“*WCS Waiver Order*”).

¹¹⁵ *LMDS Waiver Order* at ¶ 5.

¹¹⁶ *Id.*

¹¹⁷ *WCS Waiver Order* at ¶ 10; see also *In the Matter of Space Data Spectrum Holdings, LLC AWS Station WQLA880 A Block, Alaska 1-Wade Hampton CMA Request for Waiver and Extension of Time of Tribal Land Bidding Credit Construction Requirement, Memorandum Opinion and Order*, 29 FCC Rcd 3523, ¶ 14 (WTB BD 2014) (“*Space Data Waiver Order*”) (granting a waiver due in part to the unique technical requirements of the band).

¹¹⁸ *Space Data Waiver Order* at ¶ 14.

¹¹⁹ With respect to PCSP’s circumstances, the Commission has recognized that the “M-LMS rules place significant restrictions on M-LMS operation,” 2006 NPRM at ¶ 3, with unique sharing requirements that have “hindered the ability of licensees to secure equipment,” *Request of Progeny LMS, LLC for a Three-Year Extension of the Five-Year Construction Requirement for its Multilateration*

decisions where the Commission found the fact of equipment unavailability to be beyond the licensee's control, and waived constructed deadlines.

The Bureau also has recognized that when one licensee has completed limited equipment deployment, that effort “cannot be replicated by other licensees because [the company’s] technology is proprietary.”¹²⁰ Nonetheless, the *Order* denies relief to PCSP even though PCSP has made clear that it has no access to Progeny’s proprietary technology. Moreover, like other licensees granted waivers, PCSP diligently sought a remedy by investigating alternatives and making ongoing efforts,¹²¹ has shown that it has faced factors beyond its control in obtaining equipment,¹²² has shown that circumstances “have limited [its] options in providing service,”¹²³ and has explained that it would be in the public interest for the Bureau to grant an extension of time to meet its buildout requirements.

Finally, PCSP notes that in granting M-LMS rule waivers to Progeny, the Bureau acknowledged the significant changes in position location technology since the original M-LMS rules were adopted; that the rules were intended to provide licensees flexibility in developing technology solutions, that without a waiver, the rules would impede Progeny’s ability to offer a competitive, innovative service, and that strict application of the rules would be inconsistent with the public interest, without undermining the rules’ objectives.¹²⁴ Notwithstanding that the specific rules at issue are different, application of these considerations to PCSP’s Petition should result in comparable treatment. The *Order* failed to explain its disparate treatment of PCSP while affording relief to Progeny and other licensees.

Location and Monitoring Services Economic Area Licenses, Memorandum Opinion and Order, 21 FCC Rcd 5928, ¶¶ 12-13 (WTB MD 2006), and prescriptive technical requirements warranting waiver of construction deadlines. *Progeny Waiver Order*.

¹²⁰ *WCS Waiver Order* at ¶ 9.

¹²¹ *Space Data Waiver Order* at ¶ 14.

¹²² *See LMDS Waiver Order* at ¶ 24.

¹²³ *WCS Waiver Order* at ¶ 9.

¹²⁴ *See Progeny Waiver Order* at ¶¶ 15-23.

III. CONCLUSION AND REQUEST FOR RELIEF

For the foregoing reasons, the Bureau should reconsider the *Order* and grant PCSP's request for extension or waiver of construction deadline and for waiver of Section 90.353(b), and reinstate PCSP's M-LMS licenses.

Respectfully submitted,

PCS PARTNERS, L.P.

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Its Counsel

December 20, 2017

DECLARATION OF NAT NATARAJAN, Ph.D.

1. My name is Nat Natarajan. I am providing this Declaration to be submitted with PCS Partners, L.P.'s (PCSP) Petition for Reconsideration of the Order, In the Matter of PCSP Partners, L.P. Petition for Waiver of 47 C.F.R. § 90.353(b) and Request for Extension of Time and for Expedited Treatment, WT Docket No. 16-149 (WTB MD Nov. 20, 2017) (Order).
2. I previously submitted a Declaration that was attached to PCSP's Reply Comments in WT Docket No. 16-149 (Reply Comments Declaration). That Declaration described my educational and professional background and experience, which I incorporate herein by reference. I also participated in meetings with Commission staff to discuss technical aspects of the Petition and made myself available to answer questions from Commission staff regarding technical matters.
3. As I stated in my prior Declaration, at the request of PCSP, I conducted a comprehensive review of the Multilateration Location and Monitoring Service (M-LMS) spectrum, its purpose, and current rules (Part 90) applicable to PCSP's use. Based on my analysis of such rules and recognition of the reality of wireless communication market, I assisted PCSP in developing a technical proposal that not only meets the primary original purpose of M-LMS (location determination and monitoring using a trilateration technique) but also utilizes the spectrum efficiently and productively by inherently and simultaneously offering support of narrowband Internet of Things (IoT) applications. The main concepts of such technical proposal were an integral part of PCSP's Petition for Waiver and Request for Extension of Time submitted April 15, 2016 (Waiver Petition) and the Amendment to the Petition submitted August 19, 2016.
4. At the request of PCSP I conducted a comprehensive review of the Order, focusing on technical matters. I have concluded that, for the reasons provided below, there is sufficient technical justification for reconsideration of the Order's denial of the Waiver Petition. Except as noted, all references to the Order are to paragraph 15.
5. The Order states that PCSP "has not met its burden of providing sufficient and concrete technical information in its request about its proposed system that would establish a valid basis for granting a waiver." I note that the Waiver Petition stated that PCSP's proposed system conforms to the 3GPP LTE standard, Release 13, described fully in references cited.¹

¹ As noted in my Reply Comments Declaration, the LTE radio access network protocol is found at <http://www.3gpp.org/> references. Specific references include:

TS 36.201	Evolved Universal Terrestrial Radio Access (E-UTRA); LTE physical layer; General description
TS 36.211	Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation
TS 36.212	Evolved Universal Terrestrial Radio Access (E-UTRA); Multiplexing and channel coding
TS 36.213	Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer procedures
TS 36.214	Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer; Measurements

PCSP (Petition at 8, 10, 13; Reply Comments Declaration at 3-6) provided additional detailed technical information about the bandwidth, power levels, implementation and deployment plan for the proposed system. Description of how the proposed system meets the requirements of the M-LMS rules also was described in the Waiver Petition (footnotes 9, 22; 3GPP documents cited in footnote 30) and at the June 22, 2016 ex parte meeting). Consequently, it is not apparent to me what elements are lacking in the technical information PCSP has provided in this proceeding.

6. The Order states that the Waiver Petition “raises significant technical uncertainties. For example, that PCSP has not provided sufficient technical information addressing how its proposed system will transmit both M-LMS and MTC information without causing interference between these different functions.” The LTE standard that PCSP cited and

TS 36.300 Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2
TS 36.302 Evolved Universal Terrestrial Radio Access (E-UTRA); Services provided by the physical layer
TS 36.304 Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) procedures in idle mode
TS 36.305 Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Stage 2 functional specification of User Equipment (UE) positioning in E-UTRAN
TS 36.306 Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio access capabilities
TS 36.321 Evolved Universal Terrestrial Radio Access (E-UTRA); Medium Access Control (MAC) protocol specification
TS 36.322 Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Link Control (RLC) protocol specification
TS 36.323 Evolved Universal Terrestrial Radio Access (E-UTRA); Packet Data Convergence Protocol (PDCP) specification
TS 36.331 Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification
TS 36.355 Evolved Universal Terrestrial Radio Access (E-UTRA); LTE Positioning Protocol (LPP)
3GPP TS 37.571-1 E-UTRA UE conformance specification; for UE positioning; Part 1: Conformance and specification

Additional references to relevant 3GPP specifications can be found at footnote 30 of the Waiver Petition. Additional descriptions of the LTE radio access network protocol are found in: Sassan Ahmadi, LTE-Advanced: A Practical Systems Approach to Understanding the 3GPP LTE Releases 10 and 11 Radio Access Technologies, Academic Press, 2014, ISBN: 978-0-12-405162-1; Erik Dahlman, Stefan Parkvall and Johan Skold, 4G, LTE-Advanced Pro and The Road to 5G, Third Edition, Academic Press, ISBN-13: 978-0128045756; and Chris Johnson, Long Term Evolution IN BULLETS, 2nd Edition, ISBN-13: 978-1478166177.

proposes to utilize describes in detail how the two functions are integrated in the LTE radio access protocol. As stated in the Waiver Petition (at 10), PCSP plans to use Observed Time Difference of Arrival (OTDOA),² a User Equipment (UE)-assisted downlink method. OTDOA has been widely deployed in both 3GPP LTE standards-based carrier networks and in 3G UMTS carrier networks across the globe. To further explain, in LTE networks, the time of arrival measurements are taken at a UE from downlink control messages simultaneously transmitted from three or more eNodeB's (i.e., LTE base stations) and reported back to a location server via the eNodeB. This is one of the two trilateration methods allowed under the Part 90 rules for the location and monitoring service in the M-LMS bands. The relative time differences of the transmission times of the downlink signals to the UE sent from the eNodeB base stations are received by the location server. The location server calculates the location of the UE using the OTDOA measurement data, the relative transmission time differences, and the coordinates of the eNodeB base stations. In LTE networks, the standard control signaling includes Positioning Reference Symbols (PRS) that are used for the purpose of position determination. The PRS signals are inherent to the LTE standard control frame structure. It is important to recognize that (a) over-the-air signaling already includes what is necessary under the Part 90 rules to perform location determination, and (b) there is no conflict between location signaling traffic and monitoring messages (IoT or other) since LTE uses base station scheduled transmissions over the air. There is no potential for interference to occur within a single LTE system serving LMS and IoT applications since transmissions are scheduled (and not based on random access protocols).

7. The Order states that “[PCSP] omits the critical description of how these technical standards [LTE Release 13] pertaining to IoT and GPS applications -- neither of which use multilateration as described in the M-LMS service rules to triangulate location, will permit it to operate its companion M-LMS system on its licensed spectrum as described in the Commission’s rules.” I note that the Waiver Petition stated that multilateration capability as described in the M-LMS service rules, *is described in and is an integral part* of LTE Release 13 that PCSP intends to deploy. As noted in the Waiver Petition, the LTE standard uses the OTDOA method of multilateration, an integral part of the LTE over-the-air frame structure and signaling protocol. Thus, PCSP’s proposed deployment provides multilateration based location capability per M-LMS rules. With respect to IoT capability, as described in the Waiver Petition and restated above, it is an integral component of the LTE Release 13 standard that provides for both M-LMS location determination and location-based messaging capability within its radio network protocol.³

² See Alan Bensky, *Wireless Positioning: Technologies and Applications*, Second Edition, Artech House, Boston, 2016, ISBN-13: 978-1-608807-951-3; Sven Fischer, Introduction to OTDOA on LTE Networks, August 7, 2014, <https://www.qualcomm.com/documents/introduction-otdoa-lte-networks-highlights>.

³ Regarding GPS (Global Positioning System), it is not a system or standard defined by the 3GPP standards organization, and utilizes frequencies that are distinct from those licensed to PCSP.

8. The Order states that “PCSP’s general technical information on LTE Release 13 fails to provide a sufficient technical demonstration as to how its operation would not adversely affect other users in the band.” I note that PCSP did provide a coexistence analysis. (Waiver Petition at 7-8; Reply Comments at 5-7 and Attachment.) To further explain the information provided in footnote 22 of the Waiver Petition and the Reply Comments Declaration, the proposed narrowband solution, when providing only M-LMS service, would consume bandwidth equal to approximately 7 percent of the bandwidth used by Progeny’s approved location determination system. Adding IoT Location and Monitoring traffic would result in bandwidth usage comparable to that of Progeny’s system, based on a duty cycle of 56 percent compared to the 20 percent duty cycle of the Progeny solution. Thus, if the Progeny solution at 20 percent duty cycle was found acceptable in field testing, the PCSP system likewise should be acceptable until at least 56 percent duty cycle has been reached. The Waiver Petition also states that PCSP agrees to fully comply with field tests required by the rules to demonstrate compatibility with Part 15 users. The provision for field testing and the built-in mechanisms in PCSP’s proposed system to control traffic carried by it provide the means to mitigate any interference concerns that may occur after deployment. Through the base station scheduler function, the amount of bandwidth used for IoT traffic likewise can be reduced to protect primary allocation users. In sum, based on the record, it is my conclusion that the proposed system has very little potential for causing interference to other users of the 902-928 MHz band.
9. The Order states that “[w]ith respect to the unlicensed users, PCSP does not adequately address how supporting IoT applications in addition to M-LMS as proposed would sufficiently alleviate the potential impact on Part 15 users.” As described in the prior paragraph, the Waiver Petition contains a detailed coexistence analysis demonstrating that PCSP’s proposed network will not cause unacceptable interference to unlicensed users. From a technical standpoint, the Order’s reference to “sufficiently alleviate the potential impact” is unclear. From Part 15 users’ perspective, a key requirement is that an M-LMS licensee must “demonstrate through actual field tests that their systems do not cause unacceptable levels of interference,” 47 C.F.R. § 90.353(d), and as stated in the Reply Comments (at 7) the “purpose of the field test is to promote the coexistence of M-LMS and unlicensed operations in the band by ‘minimizing’ – not eliminating – the potential for M-LMS interference to Part 15 operations overall so that the band can continue to be used for unlicensed operations without detrimental impact, consistent with their Part 15 [i.e., secondary] status.” As noted above, PCSP committed to the requisite field testing and, based on my experience and knowledge both of Part 15 operations generally and PCSP’s proposed LTE-based network, I anticipate PCSP’s field testing will show no unacceptable level of interference to Part 15 users. I note that one Part 15 commenter requested additional details on PCSP’s proposed deployment, which PCSP provided, and PCSP committed to provide further details as they are defined during the deployment process.
10. The Order states that “PCSP speculates that the impact on Part 15 users will be minimal, as the interference caused by its system would only happen for very short periods of time,” and that PCSP “provides a hypothetical model while cautioning the Commission that it is

‘not to be taken literally as a prediction of future traffic patterns.’” In point of fact, the models I provided to PCSP to assess coexistence are based on use cases and interference scenarios fully representative of those expected in the operation of the proposed system, and based on the best information available at this point in time. The scenarios demonstrated that any interference that could occur would be trivial and transient, as explained in footnote 1 of my Reply Comments Declaration. As stated in prior PCSP filings, our estimation of a Part 15 device utilizing the 902-928 MHz encountering a co-channel signal is approximately 0.000056% of the time and is deemed a very small amount of potential interference. These estimates were made under anticipated customer traffic on the PCSP system utilizing its M-LMS license(s). PCSP made its traffic modeling assumptions on the basis of its anticipated customer applications intended to be well-served with the available link bandwidths (~ 1 Mbps uplink and downlink), including urgent health care (medical monitoring devices), emergency services/public safety, agriculture IoT, wearable devices, sensor networks (including connected roads, railways, buildings, smart cities, parking, lighting, environment monitoring), smart grid/utilities etc. The precise traffic demand can be known only after deployment, but it is important to recognize that any variation would not affect the conclusion that the PCSP network can be operated with de minimis effect on Part 15 or other band users. The reference to the “hypothetical model” quoted in the Order was meant to convey that the *exact* PCSP traffic patterns used in the analysis could vary somewhat from those analyzed. The PCSP system will have capability to limit the number of IoT devices supported and the total traffic presented to it in order to control interference, if necessary.

It must be noted that a precise prediction of future traffic patterns with a diverse mix of location-based services cannot be made. Since IoT machine-to-machine communications is an emerging application space, future traffic patterns will be shaped by those applications that are successful in the market. What is important to recognize is PCSP plans a system that is sufficiently robust, with control and overload mechanisms to handle any offered load and reject excess offered traffic when necessary, so it can co-exist with other operations in the band. Field testing will help identify any potential coexistence issues between PCSP and other systems in the band.

11. The Order states that PCSP “fails to clearly demonstrate in its filings how it would overcome the lack of commercially available equipment in the band....” The lack of available equipment to perform only location determination as per the M-LMS rules is valid. PCSP’s proposed system will overcome the limitation by leveraging equipment and standards that are widely deployed and available. All operational parameters and specifications, with the exception of the frequency of operation, are able to be provided by existing vendors, leveraging the substantial investment and established ecosystem of the LTE equipment market. To reiterate the discussion I participated in at PCSP’s ex parte meeting on June 22, 2016, PCSP has engaged equipment vendors who have the capability to make the modifications required for operation in PCSP’s licensed M-LMS band frequencies, which include modifications to the RF front-end.

12. The Order (para. 16) states that "PCSP seeks a waiver of its construction deadlines primarily to support its proposed IoT applications by transmitting MTC, with adjunct provision of an M-LMS service." PCSP does not in fact seek to create two separate service capabilities (IoT and M-LMS), with M-LMS as an "adjunct" to IoT. PCSP proposes to deploy a single network based on the 3GPP LTE standard, where the M-LMS capability and IoT location-based monitoring functionality are provided together as integrated functions.

13. In conclusion, PCSP has proposed a solution for effective use of its M-LMS licenses. The proposal not only fulfills the original intent of the Commission's rules requiring delivery of location and monitoring services but also enables the provision of a variety of narrow bandwidth location-based Internet of Things applications in a manner that has negligible potential to cause unacceptable interference to other users of the 902-928 MHz band. In response to the Order, the reasons I have stated above provide sufficient technical justification to reconsider the denial of PCSP's Waiver Petition.

I declare under penalty of perjury of the laws of the United States that the foregoing is true and correct to the best of my knowledge, information, and belief.

Nat Natarajan, Ph.D.

Roberson and Associates LLC

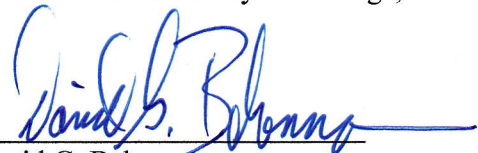
Signed: Nat Natarajan

Date: 12/20/2017

DECLARATION OF DAVID G. BEHENNA

I, David G. Behenna, hereby declare, under penalty of perjury under the laws of the United States of America, that:

1. I am the President of PCSGP, Inc., the general partner of PCS Partners, L.P. ("PCSP").
2. I have reviewed and am familiar with the contents of PCSP's Petition for Reconsideration, to which this Declaration is attached.
3. Except for facts of which public notice may be taken, the facts set forth in the foregoing Petition for Reconsideration are true, complete and correct to the best of my knowledge, information and belief.



David G. Behenna

December 20, 2017

CERTIFICATE OF SERVICE

I, Jessica D. Gyllstrom, certify that on this 20th day of December, 2017, I served copies of the foregoing Petition for Reconsideration by causing them to be sent by U.S. first-class mail, postage prepaid, to each of the following parties:

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